Abstract

Classical databases were primarily designed for the efficient storage and convenient retrieval of large amount of the precise data. However this is not always the case in real world data as much of the human reasoning is based on fuzzy reasoning. In fact, fuzzy data arise constantly in real life from human thought and cognition process and we often make decision on them.

Clearly, as DBMS becomes more important for decision making, the problem of handling fuzzy data, being more compatible with human thought, will become increasingly important. So attempts to build such DBMS which is able to represent and manipulate the fuzzy data have received a lot of attention. As a result, various models and prototype for Fuzzy database management system have been proposed and implemented.

Later on in some situation it was noticed that fuzzy databases are not sufficient to deal with in deterministic part of a relation, so the concept of
Intuitionistic fuzzy database came into existence that can handle deterministic part efficiently.

Similar to classical database, the problems of data redundancy and update anomalies do occur, if intuitionistic fuzzy database is not properly designed. As our main objective is to reduce redundancy in an intuitionistic fuzzy database we emphasized on normalization theory. Normalization is the process of organizing data in a database. This includes creating tables and establishing relationships between those tables according to rules designed both to protect the existing data (accidental deletions or amendments) and to make the database more flexible by eliminating redundancy and inconsistent dependency. A table that is sufficiently normalized is less vulnerable to problems of data anomalies, because its structure reflects the basic assumptions for when multiple instances of the same information should be represented by a single instance only.

In this thesis we have analyzed the normalization process of fuzzy database into second and third normal form and also the normalization
process of Intuitionistic fuzzy database in first normal form called 1NF(IF).

We have presented a method to normalize an intuitionistic fuzzy relation into second normal form and third normal form and we call it IF2NF and IF3NF respectively. We have also given an object oriented implementation of method proposed for Intuitionistic fuzzy database normalization.